

WHAT IS CLAIMED IS:

1. A broadband light source having a dual port structure, the broadband light source comprising:

5 a gain medium having two terminals, the gain medium being pumped by inputted pump light for outputting amplified spontaneous emission (ASE) light through both terminals; first and second output terminals leading to an exterior of the broadband light source; and

10 a pumping section for the pumping of the gain medium, wherein the broadband light source outputs the ASE light through said both terminals, through said first and second output terminals, and out to said exterior.

2. The broadband light source as claimed in claim 1, wherein the pumping section includes:

15 a pump light source for outputting pump light having a predetermined wavelength; and a wavelength-selective coupler (WSC) for outputting inputted pump light to the gain medium, wherein the gain medium is pumped in a reverse direction by the pump light.

20 3. The broadband light source as claimed in claim 2, wherein the pumping section includes:

another pump light source for outputting pump light having a predetermined wavelength; and

another wavelength-selective coupler (WSC) for outputting inputted pump light to the gain medium, wherein the gain medium is pumped in a forward direction by the pump light.

4. The broadband light source as claimed in claim 1, wherein the pumping section

5 includes:

a pump light source for outputting pump light having a predetermined wavelength; and

a wavelength-selective coupler (WSC) for outputting inputted pump light to the gain medium, wherein the gain medium is pumped in a forward direction by the pump light.

10 5. The broadband light source as claimed in claim 1, wherein the pumping section includes:

a first pump light source for outputting first pump light having a predetermined wavelength;

15 a first wavelength-selective coupler (WSC) for outputting inputted first pump light to the gain medium;

a second pump light source for outputting second pump light having a predetermined wavelength; and

a second WSC for outputting inputted second pump light to the gain medium, the pumping section being configured such that the gain medium is pumped in opposite directions
20 by the first and second pump lights, respectively.

6. The broadband light source as claimed in claim 1, wherein the gain medium has a front and a rear, said source further comprising:

a first isolator (ISO), which is located at said front, for allowing inputted ASE light to pass in a given direction and for isolating light inputted into the first ISO in a direction reverse

5 to said given direction; and

a second ISO, which is located at said rear, for allowing inputted ASE light to pass in a particular direction and for isolating light inputted into the second ISO in a direction reverse to said particular direction.

10 7. The broadband light source as claimed in claim 1, further comprising;

a first connector located at said first output terminal of the broadband light source and having a first optical fiber formed with a tip portion inclined in such a manner that an amount of light inputted into the gain medium after reflecting from the inclined tip portion is decreased; and

15 a second connector located at said second output terminal of the broadband light source and having a second optical fiber formed with a tip portion inclined in such a manner that an amount of light inputted into the gain medium after reflecting from the inclined tip portion of the second optical fiber is decreased.

20 8. The broadband light source as claimed in claim 1, wherein the gain medium includes a rare-earth element doped optical fiber.

9. The broadband light source as claimed in claim 1, wherein the pumping section includes:

a pump light source for outputting pump light having a predetermined wavelength; and

a wavelength-selective coupler (WSC) for outputting, in a given direction, inputted
5 pump light to the gain medium, the gain medium outputting light in a direction reverse to said given direction.

10. The broadband light source as claimed in claim 1, wherein the pumping section includes:

10 a pump light source for outputting pump light having a predetermined wavelength; and

a wavelength-selective coupler (WSC) for outputting, in a given direction, inputted
pump light to the gain medium, the gain medium outputting light in said given direction.

11. A method for providing a broadband light source having a dual port structure, said
15 method comprising the steps of:

providing a gain medium having two terminals;

pumping the gain medium by inputting pump light for outputting amplified
spontaneous emission (ASE) light through both terminals to cause the broadband light source to
output the ASE light through said both terminals and through first and second output terminals
20 that lead to an exterior of the broadband light source.

12. The method as claimed in claim 11, wherein the pumping step includes the step of outputting by a first light source to the gain medium first pump light having a predetermined wavelength, wherein the gain medium is pumped in a reverse direction by the first pump light.

5 13. The method as claimed in claim 12, wherein the pumping step further includes the step of outputting by a second light source to the gain medium second pump light having a predetermined wavelength, wherein the gain medium is pumped in a forward direction by the second pump light.

10 14. The method as claimed in claim 11, wherein the pumping step includes the step of outputting to the gain medium pump light having a predetermined wavelength, wherein the gain medium is pumped in a forward direction by the pump light.

15 15. The method as claimed in claim 11, wherein the pumping step includes the steps of:
providing a first pump light source for outputting first pump light having a predetermined wavelength;

providing a first wavelength-selective coupler (WSC) for outputting inputted first pump light to the gain medium;

20 providing a second pump light source for outputting second pump light having a predetermined wavelength; and

providing a second WSC for outputting inputted second pump light to the gain medium, the pumping section being configured such that the gain medium is pumped in opposite

directions by the first and second pump lights, respectively.

16. The method as claimed in claim 11, wherein the gain medium has a front and a rear, said method further comprising the steps of:

5 providing a first isolator (ISO), which is located at said front, for allowing inputted ASE light to pass in a given direction and for isolating light inputted into the first ISO in a direction reverse to said given direction; and

 providing a second ISO, which is located at said rear, for allowing inputted ASE light to pass in a particular direction and for isolating light inputted into the second ISO in a direction
10 reverse to said particular direction.

17. The method as claimed in claim 11, said method further comprising the steps of;

 providing a first connector located at said first output terminal of the broadband light source and having a first optical fiber formed with a tip portion inclined in such a manner that an
15 amount of light inputted into the gain medium after reflecting from the inclined tip portion is decreased; and

 providing a second connector located at said second output terminal of the broadband light source and having a second optical fiber formed with a tip portion inclined in such a manner that an amount of light inputted into the gain medium after reflecting from the inclined
20 tip portion of the second optical fiber is decreased.

18. The method as claimed in claim 11, wherein the gain medium includes a rare-earth element doped optical fiber.

19. The method as claimed in claim 11, wherein the pumping step includes the steps
5 of:

outputting to the gain medium, in a given direction, pump light having a predetermined wavelength; and

outputting, from the gain medium, light in a direction reverse to said given direction.

10 20. The method as claimed in claim 11, wherein the pumping step includes the steps of:
outputting to the gain medium, in a given direction, pump light having a predetermined wavelength; and

outputting, from the gain medium, light in said given direction.

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